



Physical Evidence Bulletin

Gunshot Residue (GSR) Collection

Purpose The Physical Evidence Bulletin is a guideline intended for law enforcement agencies to follow in order to submit evidence to BFS Laboratories. Physical Evidence bulletins are not intended to be used in lieu of training in the collection of evidence.

Analysis The Bureau of Forensic Services (BFS) provides analytical support to law enforcement agencies through the examination for gunshot residue.

Introduction Gunshot residue (GSR) results from the discharge of a firearm. The residue escapes through openings in the weapon and the end of a barrel and is deposited on nearby surfaces. The actual amount of residue detected varies with the type of weapon, ammunition, conditions of discharge, and post-shooting activity. **GSR analysis does not determine whether or not an individual has discharged a firearm.**

The presence of gunshot residue may occur for the following reasons:

- The subject may have discharged a firearm or been in close proximity to the discharge of a firearm
- The subject may have handled a firearm or ammunition
- The subject may have been in contact with a surface bearing gunshot residue

The absence of gunshot residue may occur for the following reasons:

- The subject did not discharge a firearm.
 - The subject may have discharged a firearm, but no GSR particles were deposited on the sampled area.
 - The subject may have discharged a firearm, but GSR particles were removed by washing, wiping, or other activity before the samples were collected.
-

Sampling and submission criteria GSR examinations will only be conducted in cases where significant information may be obtained. Therefore, as a minimum, all cases should meet the following criteria:

- **All GSR cases must receive BFS approval before submission to the laboratory.** Contact your local BFS laboratory to discuss your case.

- **The GSR collection kit used should be from the list of preferred kits below.**
 - **Sampling for GSR should only be carried out when the examination will provide the most probative information.**
 - **Do not sample if the subject is found in the possession of, or is known to have or claims to have handled, a firearm.** This analysis cannot distinguish between having fired a weapon or simply handling a firearm.
 - **Do not sample if the subject has washed his/her hands or bathed since the shooting incident.** Washing the hands is likely to remove all GSR.
 - **Do not routinely sample victims of gunshot wounds.** The presence of GSR indicates that a person has been in an environment containing GSR. Obviously, if a person has been shot, then that person has been in an environment with GSR. GSR analysis cannot determine whether the victim's death was the result of a homicide or a suicide.
 - **The time interval between shooting and sampling should not exceed 4 hours.** GSR is readily shed from the hands during even minor physical activity. The likelihood of finding GSR after a time lapse of greater than 4 hours is remote. Sampling for GSR should be performed as soon as possible after the shooting.
 - **Samples should be taken immediately after contact with the subject in the field.** To minimize the risk of contamination and/or loss of potential GSR, sample before handcuffing, transporting, or fingerprinting.
 - **Do not sample surfaces or materials other than hands.**
-

**Preferred
GSR collection
kits**

Preferred GSR collection kits contain only two stubs. The following manufactures provide GSR kits with only two stubs:

- Arrowhead Forensics, 11030 Strang Line Rd., Lenexa, KS 66215, telephone: 913-894-8388. <http://www.crime-scene.com>
 - Part #A-7201-2SB
 - Gunshot Residue (GSR) Kit – Surface SEM 2 Carbon Disks – Box
- Ted Pella, P.O. Box 492477, Redding, CA 96049-2477, telephone: 530-243-2200; 800-237-3526. <http://www.tedpella.com>
 - Product #16256-2
 - 2 Disk Forensic Gunshot Residue Field Kit
- Tri-tech Forensics, 4019 Executive Park Blvd. SE, Southport, NC 28461, telephone: 800.438.7884. <http://www.tritechusa.com>
 - Product #GSR-2SEM
 - 2 Stub GSR Collection Kit

Please note: Some GSR collection kits contain swabs. BFS is unable to examine swabs. But we can refer you to a laboratory that can analyze these types of samples.

NOTE: BFS will typically analyze ONLY TWO stubs per individual. If your GSR kit has more than two stubs, DO NOT use all of the stubs in the kit. Use one stub to sample the entire right hand, and one stub to sample the entire left hand.

**For further
information
and additional
resources**

Please contact your regional BFS laboratory with any further questions that you may have.

For a list of regional laboratories please go to:

http://ag.ca.gov/bfs/pdf/bfs_brochure.pdf or <http://ag.ca.gov/bfs/>

To locate the most current Physical Evidence Bulletins please go to:

<http://ag.ca.gov/cc/reference/reference.php#peb>
